AMENDMENTS TO THE DRAWINGS:

The attached sheets of drawings now include the legend "Prior Art" for Figures 1A-1F as requested by the Examiner on page 3 of the Office Action.

Attachments: Replacement Sheets (2 Sheets of Drawings, Figs. 1A-1F)
Annotated Sheets showing changes

REMARKS

Claims 1-20 are pending in the above-identified application. Claims 15-20 have been withdrawn from consideration in this amendment. The Examiner has rejected claims 1-14.

Elections/Restrictions

The Examiner has restricted the originally filed claims in the above-identified application into two groups. Group I includes claims 1-14 and Group II includes claims 15-20. According to the Examiner, Group I claims are "drawn to an optical waveguide device, classified in class 385, subclass 129," while Group II claims are "drawn to a method of coupling pump light into a gain medium, classified in class 385, subclass 31." (Office Action, page 2). In the interest of furthering prosecution and without acquiescing to the Examiner's characterization of the claims, Applicant herein confirms the election made on February 7, 2005. Therefore, Applicant elects to prosecute Group I, claims 1-14, in the present application. Claims 15-20 are therefore withdrawn from consideration in the present application. Applicants reserve the right to prosecute these claims in a later divisional application.

Drawings

As suggested by the Examiner, Applicant has amended the drawings so that Figures 1A-1F are designated as "Prior Art." Appropriate replacement sheets are attached to this response.

The Examiner further objects to the drawings "because they include the following reference character(s) not mentioned in the description: 304 in figure 3A, 616 in figures 6A and 6B, 805 and 806 in figure 8B, and 1105 in figure 11." The specification has been amended to include discussion of these reference characters. In particular, paragraph [041] has been amended to include discussion of reference character 304; paragraph [050] has been amended to

include discussion of reference character 616; paragraph [059] has been amended to include discussion of reference characters 805 and 806; and paragraph [068] has been amended to include discussion of reference character 1105. No new matter has been added by these amendments.

Specification

The Examiner has objected to the specification

> because of the following informalities: "a high refractive refractive index" in lines 1 and 2 of paragraph 34 should apparently be "a high refractive index". The word "slap" in line 2 of paragraph 36 should apparently be "slab". "VCSELs 1401" in lines 2 and 3 of paragraph 71 should apparently be "VCSELs 1403".

(Office Action, page 4). Paragraphs [034], [036], and [071] have been amended accordingly.

Product by Process Claims

The Examiner states that "[c]laims 1-14 do not distinguish over the prior art of record regardless of the process used to create the slab waveguide, because only the final product is relevant, and not the process of making such as DC-biased plasma vapor deposition." (Office Action, page 4). However, in the present invention, as pointed out in the specification , for example at paragraphs [062] to [064], the product made by the DC-biased plasma vapor deposition process has distinguishable structural characteristics. Some of those structural characteristics include waveguide materials of highly amorphous, defect free films with very high optical transparency.

As stated in the MPEP,

> The structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over

> the prior art, especially where the product can only be defined by the process steps by which the product is made, or where the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product. See, e.g., In re Garnero, 412 F.2d 276, 279, 162 USPQ 221, 223 (CCPA 1979) (holding "interbonded by interfusion" to limit structure of the claimed composite and noting that terms such as "welded," "intermixed," "ground in place," "press fitted," and "etched" are capable of construction as structural limitations.)

MPEP, sec. 2113. Therefore, the structure provided by the limitation "deposited by biased pulsed DC plasma vapor deposition" does distinguish over the prior art. The structure imposed by this process step (for example, highly amorphous, defect free films with high optical transparency) is distinctive to the biased pulsed DC plasma vapor deposition process.

Claim Rejections under 35 U.S.C. § 102

The Examiner rejected claims 1-4, 6, 7, 9, and 12 under 35 U.S.C. 102(e) as being anticipated by U.S. 2001/0031122 A1 ("Lackritz et al."). Lakritz does not describe a structure as described by the limitation "wherein the slab waveguide is deposited by biased pulsed DC plasma vapor deposition," as recited in claim 1.

However, Lackritz teaches a slab waveguide structure where "[t]he lower cladding 202 is preferably a crosslinked polymer . . . ." (Lackritz, par. [032]). As stated in Lakritz,

> [t]he lower cladding 202 may be deposited on the substrate by one of the many available methods known in the art (dependent on the material used), such as for example spin, meniscus, extrusion, spray, dip, slot-die, or flash evaporation coating for polymer materials, vacuum deposition (e.g. evaporation, sputtering, chemical vapor deposition, CVD, or plasma enhanced CVD) for hard oxide or nitride materials such as SiO_2 or SiN_x. The top surface of the resulting lower cladding layer (the surface furthest from the substrate) should be optically smooth and defect free so as to result in low scattering of the optical mode at the corecladding interface and subsequently lead to a low optical waveguide propagation loss in the integrated optical circuit. In

> addition, the cladding layer material itself should inherently exhibit low absorption and scattering at the wavelength(s) to be guided in the optical structure.

(Lakritz, par. [033]). Therefore, although Lakritz teaches hard oxide cladding layers, the preferred cladding layer is polymer and Lakritz does not teach the highly amorphous, defect free, highly transparent structure attained by biased pulsed DC plasma vapor deposition processes. Further, as described in Lakritz, "[a]n optical core layer 204, preferably a polymer layer as described below, is next applied over the lower cladding layer 202 to ultimately provide an optical waveguide structure." (Lakritz, par. [034]). Finally, "[t]he deposition process for the core layer is again dependent on the material choice . . . suitable choices for the core layer are polymer materials . . . ." (Lakritz, par. [035]). Therefore, nowhere does Lakritz teach a slab waveguide structure such as that described by the limitation "wherein the slab waveguide is deposited by biased pulsed DC plasma vapor deposition," as recited in claim 1.

Therefore, claim 1 is allowable over Lakritz. Claims 2-4, 6, 7, 9, and 12 depend from claim 1 and are allowable over Lakritz for at least the same reasons as is claim 1. Applicants do not acquiesce in the Examiner's characterization of Lakritz as applied to the claims. For example, Lakritz does not teach an amorphous slab waveguide as is suggested by Examiner's analysis of claim 2. Lakritz teaches a polymer waveguide.

Claim Rejections under 35 U.S.C. § 103

The Examiner rejected claim 5 under 35 U.S.C. 103(a) as being unpatentable over Lackritz et al. in view of Beach. Claim 5 depends from claim 1 and is allowable over Lakritz for at least the same reasons as is claim 1. Beach does not cure the defects in the teachings of Lakritz. Therefore, claim 5 is allowable over Lakritz in view of Beach.

The Examiner rejected claim 8 under 35 U.S.C. 103(a) as being unpatentable over Lakritz in view of Hubner. Claim 8 depends from claim 1 and is allowable over Lakritz for at least the same reasons as is claim 1. Hubner does not cure the defects in the teachings of Lakritz. Therefore, claim 8 is allowable over Lakritz in view of Beach.

The Examiner rejected claims 10 and 14 under 35 U.S.C. 103(a) as being unpatentable over Lakritz in view of Medin. Claims 10 and 14 depend from claim 1 and therefore are allowable over Lakritz for at least the same reasons as is claim 1. Medin does not cure the defects in the teachings of Lakritz. Therefore, claims 10 and 14 are allowable over Lakritz in view of Medin.

The Examiner rejected claims 11 and 13 under 35 U.S.C. 103(a) as being unpatentable over Lakritz in view of Henrichs. Claims 11 and 13 depend from claim 1 and are allowable over Lakritz for at least the same reasons as is claim 1. Henrichs does not cure the defects in the teachings of Lakritz. Therefore, claims 11 and 13 are allowable over Lakritz in view of Henrichs.

Therefore, claims 5, 8, and 10-14 are allowable over the cited art. Applicant neither addresses nor acquiesces to the Examiner's characterization of the art in these rejects.

Conclusion

In view of the foregoing amendments and remarks, Applicant respectfully requests reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

Dated: July 14, 2005

By: _____
Gary J. Edwards
Reg. No. 41.008

Attachments: Annotated Sheets showing changes
2 Sheets of Replacement Sheets (Figures 1A-1F)

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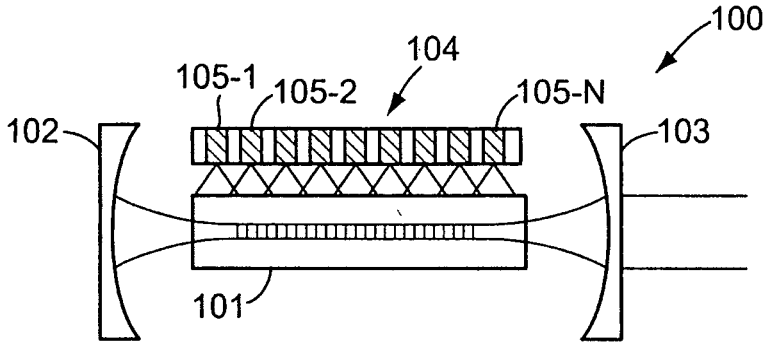

FIG. 1A
(Prior Art)

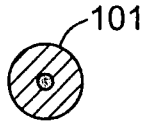

FIG. 1B
(Prior Art)

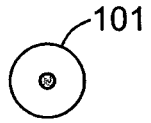

FIG. 1D
(Prior Art)

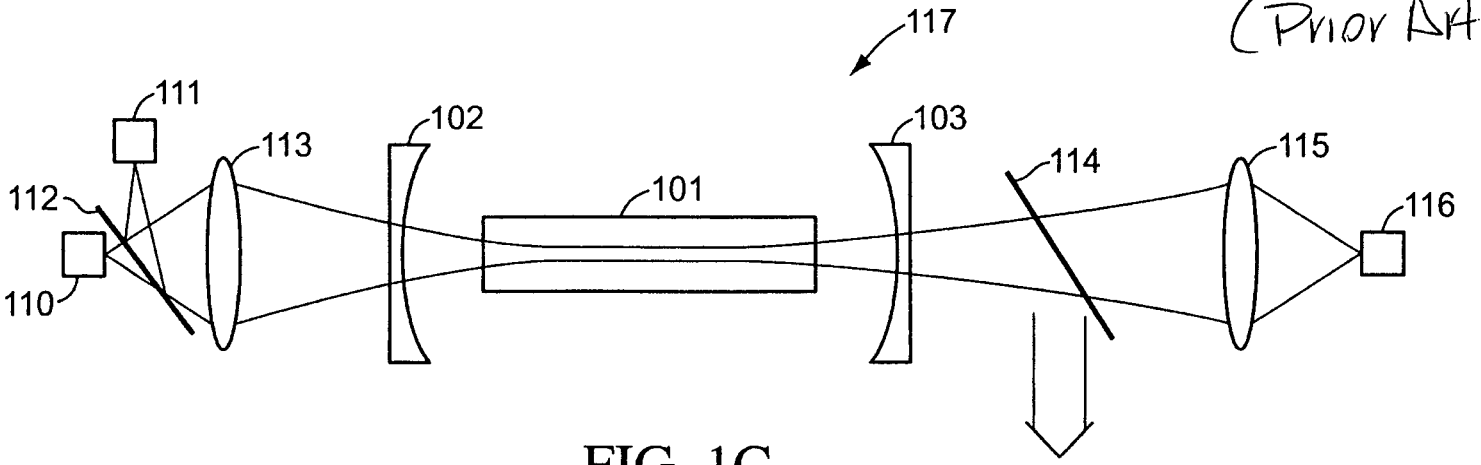

FIG. 1C
(Prior Art)

U.S. Application No. 10/650,461
Title: Optically Coupling Into Highly Uniform Waveguides
Attorney Docket No. 9140.0025
Sheet 1 of 11; Figure(s) 1A, 1B, 1C, and 1D

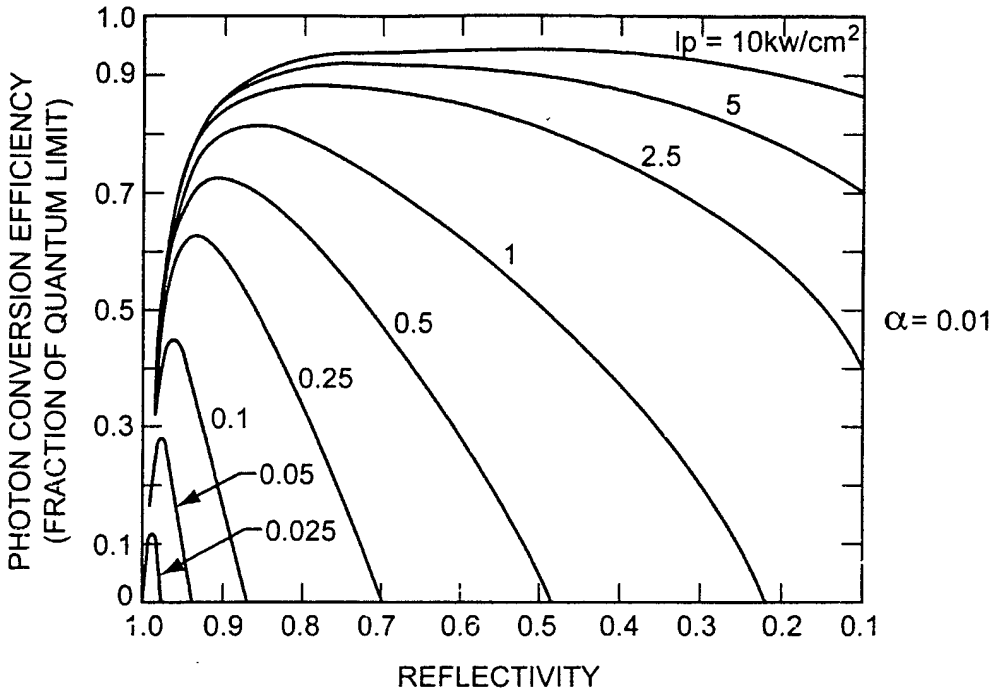

FIG. 1E

(Prior Art)

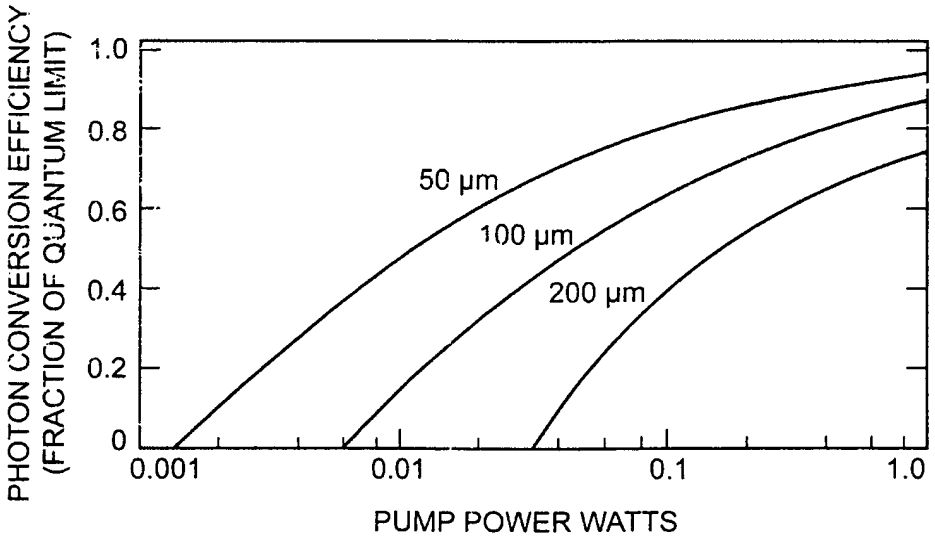

FIG. 1F

(Prior Art)